補中益氣湯對單向抑制性被動避暗學習反應之影響

❐ 謝明村　孫樂珊　彭文煌 中國醫藥學院　中國藥學研究所

補中益氣湯始載於元．李東垣之脾胃論，係由黃耆、人參、柴胡、升麻、白朮、炙甘草、陳皮、當歸八味藥所組成，主治脾胃氣虛、中氣下陷者。在現代的臨床藥理研究報告中指出補中益氣湯具有鎮靜作用，然其轉機並未見有探討；另外日本三本的研究報告中指出補中益氣湯治療健忘及老年痴呆也有效。據初步研究，本方一次給藥顯示有鎮靜作用，連續給藥一周則顯示有興奮作用。因此本研究之目的除了探討一次給藥之鎮靜作用機轉及連續給藥一周之興奮作用機轉之外，亦探討其是否能改善學習記憶。另外本研究依君臣佐使藥性之不同將補中益氣湯分爲三組，比較其方劑組成之意義，以促進中醫藥之科學化。獲致結果如下：

一次給藥組之A、B、C三組在大劑量時皆明顯延長由 hexobarbital 所誘發之睡眠時間；連續給藥之三組在大劑量時皆明顯縮短睡眠時間。連續給藥之C組在大劑量時對 scopolamine 給藥後之 step-through latency（STL）有明顯延長作用而A、B、C三組 cycloneximide 給藥之 STL 有明顯延長作用。在自發運動量的試驗中，採用C組（1.0g/kg）來探討其鎮靜作用機轉，結果顯示一次給藥後可降低由 scopolamine、PCPA 所誘發之運動量興奮作用，加強由 α-MT、5-HTP、haloperidol 所誘發之運動量抑制作用；連續給藥可加強由 scopolamine、PCPA 所誘發之運動量興奮作用，拮抗由 α-MT、5-HTP、haloperidol 所誘發之運動量抑制作用。

綜合以上之研究結果，顯示元．李東垣脾胃論之補中益氣湯在一次給藥（大劑量）後具鎮靜作用，連續給藥（大劑量）後具興奮作用。全方（C組）在大劑量連續給藥後對於記憶之獲得、鞏固有明顯之改善有明顯之改善，顯示其改善學習記憶障礙之作用機轉可能與增強中樞 cholinergic system 及 protein synthesis 之活性有關，而A、B組則可能與增強 protein synthes is 之活性有關。此外全方（C組）之鎮靜作用機轉可能與降低中樞 catechol aminergic system 之活性、增強 serotonergic system 之活性有關；而全方（C組）之興奮作用機轉可能與增強中樞 catecholaminergic system 之活性、降低 serotonergic system 之活性有關。

Effects of Pu-Chung-I-Chi-Tang on the One-trial Inhibitory Step-through Passive Avoidance in Rats

Ming-Tsuen Hsieh, Lo-Shau Sun, Wen-Huang Peng

**Institute of Chinese Pharmaceutical Sciences,
China Medical College**

In this study, we divided the Pu-Chung-I-Chi-Tang (abbr. as PCT) into three groups:(1) A group was consisted of Astragali Radix, Ginseng Radix, Atractyloidis Rhizoma, Bupleurum Radix. (2) B group was consisted of Glycyrrhizae Radix, Angelicae Sinensis Radix, Aurantii Pericarpium and Cimicifugae Rhizoma.(3) C group (i.e. PCT) was consisted of Astragali Radix, Ginseng Radix, Atractyloidis Rhizoma, Glycyrrhizae Radix, Angelicae Sinensis Radix, Aurantii Pericarpium, Cimicifugae Rhizoma and Bupleurum Radix. We also used behavior pharmacological methods to investigate the sedative effect of A, B, C groups in acute treatment and excitatory effect of A, B, C groups after one-week consecutive treatment.

A, B, C groups prolonged the hexobarbital-induced sleeping time in acute treatment, whereas, A, B, C groups shortened the hexobarbitalinduced sleeping time after one-week consecutive treatment. C group prolonged the scopolamine-induced step-through latency(STL) at higher dose. A, B, C groups prolonged the cycloheximide-induced STL. C group (1.0g/kg, p.o)in acute treatment reduced the hypermotilities produced by apomorphine or PCPA. Moreover, it potentiated the hypomotilities produced by α-MT, haloperidol or 5-HTP. On the other hand, C group potentiated the hypermotilities produced by apomorphine or PCPA. It also reduced the hypomotilities produced by α-MT, haloperidol or 5-HTP. These results shown that PCT produce sedation in acute treatment, excitation and memory improvement after one-week consecutive treatment. The sedative effect of C group in the acute treatment can be due to the decrease in the dopaminergic activity and the increase in the serotonergic activity.

The excitatory effect of C group after one-week consecutive treatment can be due to the increase in the dopaminergic activity and the decrease in the serotonergic activity. The learning and memory improvement effect of C group after one-week consecutive treatment may be due to the increase in cholinergic system activity and protein synthesis.